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25X1



October 26, 1970

Attention: John C.

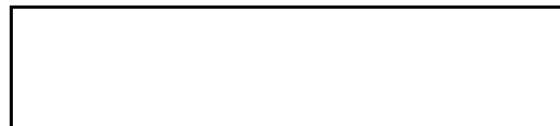
Dear John:

Enclosed for your files are three (3) copies of
Activity Summary No. 17, 2201201-AS-17.

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Sincerely,



Senior Staff Scientist

PSC/c
Enclosures

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WHEN SEPARATED FROM CLASSIFIED
ATTACHMENTS

Declassification Review by
NGA/DoD

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Copy No. 1 of a-d.

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October 26, 1970

ACTIVITY SUMMARY

To: John C.
From: [REDACTED]
Subject: Contract Visit to Customer Facility
[REDACTED] (5500-6076) 70R
Date(s): October 21,22, 1970
Reference: [REDACTED] 2201201-AS-17

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Since the previous visit to the [REDACTED] on 6-8 October 1970, system improvements have been effected. These improvements were necessitated by an unexpected change in procedure, in that high quality prints of imagery can be obtained at 1 and 10X, but the intended 3X enlargement is more limited in duping quality. The original set-up was directed for processing imagery with an expected resolution after a 3X enlargement. Because of insufficient quality in the 3X duping process, we selected contact prints for input to the system since this is the most relevant to future direction. Lenses were changed to accommodate the higher resolution requirements and a liquid gate was introduced in the filter plane.

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During this visit a series of processing operations were performed using a CORN target image. The purpose of these operations was to determine optimum conditions of the optical system for the apparent contrast and resolution (lines/mm) of the input target. We expect to conclude the work on this target prior to the end

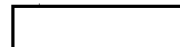
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of October (see Program Plan attached) and commence with continuous tone imagery. Continuous-tone image samples were selected for use in upcoming work.

Details of the effort on this program are noted in the laboratory notebooks. A Program Plan outlining the effort for the program up to the next visit is attached to this Activity Summary. A copy of the plan was left at the lab with John C. on 22 October. The next visit is scheduled for 28,29 October 1970.

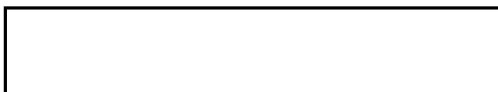
PSC/c

Attachment

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To John C.

25X1
Fm.

Subject Program Plan

Date 22 Oct., 1970

The primary purpose of the remaining tasks is to conclude image manipulation procedures on the CORN target imagery, quantify the results, and initiate processing of operational image samples.

- We have shown (results of 21 Oct.) that best output of the CORN target was obtained with the 4mm. diameter filter, 1.2 density, with the medium source size (position at 179.5 cm. on optical bench). To conclude this, the following outline is provided.

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- (1) Perform image process with 4 mm, and 2 mm. diameter, 1.2 D filters and at the three source positions. Record output with step wedge.
 - (a) Evaluate 2 mm. vs. 4 mm. dia. filters.
 - (b) Select best output.
- (2) Perform micro-d analysis of CORN imagery to quantify present status.
 - (a) Scan CORN input, best output, and step wedge exposure. Plot H+D curve of output record.
 - (b) Measure I_{max} and I_{min} for frequency samples of CORN image and processed output using microd. traces.

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contrast vs. frequency.

(c) Generate conclusive demonstration of results. Use photos to defend and quantify status. Illustrate resolution improvement and contrast enhancement it present.

(3) Prepare continuous tone imagery for use in this experimental test series. Goal is to start evaluation system application to this imagery by 28 Oct., 1970.

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Copy No. 1 of 2 25X1

November 2, 1970

ACTIVITY SUMMARY

To: John C.
From: [REDACTED]
Subject: Contract Visit to Customer Facility
[REDACTED] (5500-6075) 70R.
Dates: October 28, 29, 1970
Reference: [REDACTED] 2201201-AS-18

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On 28,29 October [REDACTED] worked at the [REDACTED] 25X1

[REDACTED] under the above referenced program. During these two days we emphasized manipulation of operationally relevant imagery. We concluded the bench processing of CORN target imagery and prepared recorded results for microdensitometer tracing and evaluation of system response. Some preliminary traces were taken to review the status of high frequency enhancement and contrast enhancement on the CORN target. Additional traces will be taken of processed data to evaluate the gain obtained by the image manipulation process.

Continuous tone imagery was placed in the optical system and manipulation of its information content will be performed and evaluated over the next two months. Some preliminary results should be available within the first month.

The specific details of performance of these two days are noted in the laboratory notebooks, copies of which are delivered with the monthly reports. Attached to this Activity Summary is the Program Plan for the continuing laboratory effort.

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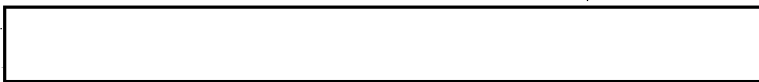
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To John C.

25X1 From



Subject Program Plan

Date 29 October, 1970

At this time we have fulfilled our major objectives with the CORN target imagery and have initiated image manipulation of continuous tone targets. We now want to complete analysis of the enhanced CORN target imagery and pursue manipulation objectives of the selected continuous tone imagery. The following points should be performed during the next 1 1/2 weeks.

A) CORN target imagery

Obtain microdensitometer traces of the processed, unfiltered, and input images. Use the traced data

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together with step wedge data to evaluate the increased contrast response obtained. Direct evaluation towards demonstration of expected system response. Compare with expected curves for system frequency response given a low contrast linear response.

B) Continuous tone imagery

1. Check out system configuration, using the smaller F first transform lens and a smaller F collimating lens. Also check out possible film processes for recording the output at high resolution and at gamma of one.

2. Fabricate a new set of filters (as earlier) but at about $1/3$ the scale. Maintain a similar density

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range.

3. Use selected continuous-tone imagery and record manipulated output with variations in the source diameter, in filter diameter, and in filter density. Preliminary evaluation visually may allow one to eliminate some variables such as low density and/or high density filters.